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PROFESSOR WILLIAM PROCTER, JR.

1817–1874.

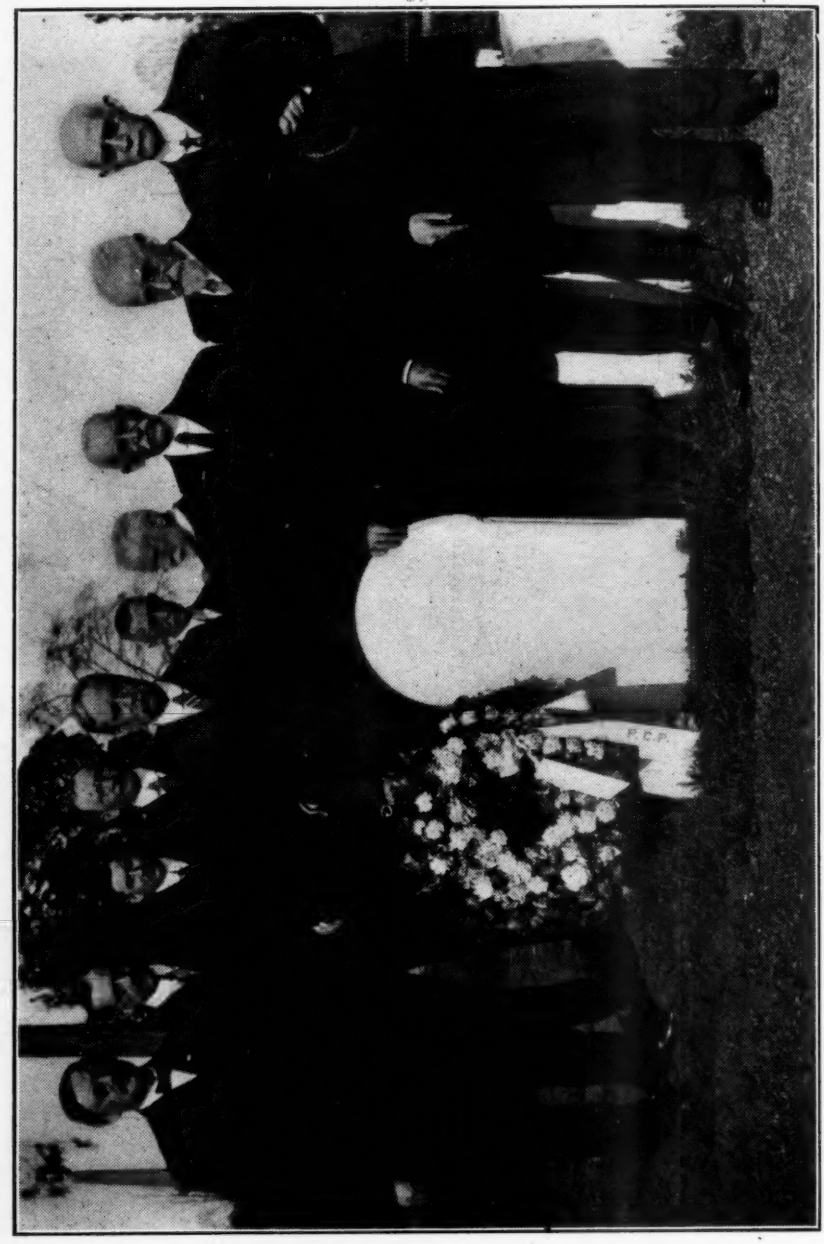
By JOSEPH P. REMINGTON.

Forty years have elapsed since the former editor of this JOURNAL passed away on that fateful night of February 10, 1874. During these forty years Pharmacy has developed by leaps and bounds; new and weighty problems have arisen and have been solved, but many more remain, and the future gives promise of still greater achievements in the profession which Procter loved.

To John F. Hancock, of Baltimore, must be given the principal credit for inaugurating and carrying to successful fruition the work of erecting a statue in bronze to perpetuate the memory of this great pioneer in professional pharmacy.

The ninety-seventh anniversary of his birthday was celebrated at the Philadelphia College of Pharmacy on May 3rd by a special meeting of his friends and former students. Reminiscences and tributes to his memory were freely uttered, followed by a dinner and a trip in the afternoon to Mount Holly, N. J., to visit his summer home and grave. Among those present were the following:

Dr. B. S. Erwin	C. B. Lowe
O. W. Osterlund	C. H. LaWall
C. A. Weidemann	R. C. Lippincott
Dr. W. H. H. Githins	Otto Kraus
Howard B. French	Henry Kraemer
J. S. Beetem	F. X. Moerk
W. Estell Lee	J. P. Remington
Thomas D. McElhenie	Edward Berge
George M. Beringer	J. F. Hancock
Adolph W. Miller	Martin I. Wilbert



[Courtesy of *American Druggist.*]

GROUP AT THE GRAVE OF WILLIAM PROCTER, JR., IN MT. HOLLY, N. J.

Samuel M. Bines	Dr. F. E. Stewart
Hugh Campbell	E. B. Jones
Dr. Henry A. Newbold	Harry P. Thorn
Edwin M. Boring	Alexander Dubell

The special object of bringing Procter's friends together was to have them comment upon and criticise a *model* of a bronze statue which it is proposed to erect upon the grounds of the Smithsonian Institution, at Washington. The sculptor, Edward Berge, has reproduced in a remarkable manner, from photographs and very scanty material at command, a model which will serve as a starting point in the work of moulding the bronze statue.

The following resolution was unanimously passed by the meeting:

"*Resolved*, That the work of Mr. John F. Hancock in connection with the Procter Memorial be approved, and that the model and design of Mr. Edward Berge, of Baltimore, for the statue be accepted."

It is meet and right to erect statues to our honored dead, *lest we forget*, but Procter's greatest monument must ever be his great services to Pharmacy, and especially his twenty-eight years as Editor of the AMERICAN JOURNAL OF PHARMACY.

"Could each here vow to do his little task as the departed did his great one—in the manner of a true man—not for a day, but for eternity; to live as he counseled, not commodiously in the Reputable, the Plausible, the Half; but resolutely in the Whole, the Good, and the True."—*Carlyle*.

THE "CLAYTON FRENCH FELLOWSHIP" IN THE PHILADELPHIA COLLEGE OF PHARMACY.

When an institution is well equipped especially for doing work which is not in the regular routine of things it seems a shame when few or none are encouraged to profit by such favorable circumstances. Our institution, owing to its long standing, the activity and friendly relations of its faculty with the outside world, has gradually accumulated apparatus and materials which, owing to the general nature of things, can be used only by those who are interested in problems external to the regular course of instruction. There is no such thing, as yet, as a post-graduate course here, but there has recently been made the first step in that direction. The fellowship

GROUP AT THE GRAVE OF WILLIAM PROCTER, JR., IN MT. HOLLY, N. J.

which we are about to mention will make it possible for some capable and interested student to pursue work along some particular line of investigation which would otherwise go untouched but for this stimulus. Both the student and the college will profit thereby, and there is also the chance that it may lead to some big benefit to the profession of pharmacy as a science. It is a hard enough thing to settle down to the prosaic task of fathoming out a difficult problem, and anything like this which makes it an honor and which reduces also the financial burden of such a task is almost essential to the building up of a great work.

In order to provide for fellowships, and that those who would contribute to such endowments might know to what purposes they would be applied, a new article on Scholarships and Fellowships has been incorporated into the By-laws of the Philadelphia College of Pharmacy. This article reads as follows:

"Scholarships and Fellowships covering instruction given in the College or studies pursued elsewhere by direction of its Board of Trustees, may be established by the Board of Trustees as funds for such purposes are provided.

"To found a Pharmacy Course Scholarship, a sum of not less than $3000 shall be paid to the College. The student to whom such scholarship is awarded shall receive free instruction in all of the lectures and laboratories in the course leading up to a degree in Pharmacy for the period for which the award is made.

"To found a Special Scholarship or a Partial Pharmacy Course Scholarship, a sum of not less than $1500 shall be paid to the College. In no case shall the sum paid be less than, when invested, will produce an income equivalent to the fees required by the College from students for similar instruction. The donor may designate the course of lectures or laboratory instruction to which such special bequest or donation is to be applied. The student to whom such Special Scholarship or Partial Pharmacy Course Scholarship is awarded shall receive free instruction in the lectures and laboratories named for the period for which the award is made.

"To found a Research Fellowship, a sum of not less than $5000 shall be paid to the College; the income from such a foundation is to be paid to the student to whom such fellowship is awarded to pay for the tuition, materials, and apparatus used in the research work and as compensation for such aid in the laboratories, museums, library, or other department of the College as the recipient may render.

"The founder of a fellowship may designate the title of the fellowship and the special investigation, science, or department to which the research is to be directed, and may select, from time to time, the fellow to whom the fellowship is to be awarded. In the absence of such designation or selection the Board of Trustees shall decide the title and the application of the research, and, subject to confirmation by the Board of Trustees, nominate from time to time the fellow on written application setting forth the subject of research work that is to be engaged in, preference is to be given to post-graduate study in the sciences associated with pharmacy.

"If any student to whom a scholarship or a fellowship is awarded is found to be of improper character, or is deficient in mentality or scholarship, or fails to attend the instruction or to pass satisfactory examinations, the award shall be cancelled.

"A scholarship or a fellowship is awarded, in accordance with the By-Laws and Rules and Regulations established by the Board of Trustees, to the student named and for the period specified and cannot be transferred by the recipient.

"All moneys received by the College for the purpose of founding a scholarship or fellowship shall be invested by the Finance Committee in accordance with their best judgment, and a separate account shall be kept of each such scholarship or fellowship.

"If any donation or bequest received for the purpose of founding a scholarship be insufficient for the purpose intended, then such sum received shall be invested by the Finance Committee, and when the aggregate of the principal and accrued interest is sufficient for the purpose intended, the scholarship shall be established by the Board of Trustees.

"The Board of Trustees shall have authority to offer, in the name of the College, free scholarships to students of such public schools or other educational institutions as the Board may designate."

At a recent meeting of the Board of Trustees President French announced that Mrs. Mary French Banks, of Philadelphia, had donated through him the sum of $5000 for the establishment of a fellowship as a memorial to her father, Clayton French. The Board gratefully accepted the sum and established a fellowship, to be known as the "Clayton French Fellowship." The following is a copy of the letter of transmittal to Mrs. Banks by the Chairman of the Board of Trustees:

MAY 5, 1914.

MRS. G. W. BANKS,
Philadelphia, Pa.

Dear Madam:

Mr. Howard B. French, at the meeting of the Board of Trustees of the Philadelphia College of Pharmacy this P.M., presented your check drawn to his order and endorsed by him to the Treasurer of the College for $5000 to establish a Fellowship as a memorial to your deceased father, Clayton French. Permit me to assure you the appreciation of the Board for the courtesy you have extended and the honor that you bestow upon one who many years ago was a student in this institution.

The following resolutions were unanimously passed and ordered to be forwarded to you:

"*Resolved*, That the Board of Trustees of the Philadelphia College of Pharmacy gratefully acknowledge receipt of Five Thousand Dollars ($5000), through the hands of Mr. Howard B. French, from Mrs. Mary F. Banks, to be used in establishing a Fellowship in honor of her deceased father, the late Clayton French.

"*Resolved*, That a marble tablet be erected in the hallway of the College, bearing the following inscription:

1824 1890

Clayton French

FELLOWSHIP

Established by his daughter

Mary French Banks

May 16th, 1914

"*Resolved*, That the Five Thousand Dollars ($5000) donated for establishing the Clayton French Fellowship shall be invested in our mortgage account, and that the income therefrom shall be used for advanced research work."

Assuring you the deepest appreciation of the Board, I have the honor to be

Yours truly,

GEORGE M. BERINGER,
Chairman of the Board.

THE VOLUMETRIC ESTIMATION OF SULPHATES.

By Horace North.

Although SO_4 is easily the most important acidic ion concerned in the operations of industrial chemistry, there is at the present time no satisfactory method of general application for its volumetric estimation. A method is proposed which, in the light of numerous experiments, promises to be widely useful. Subject to certain limitations which will be considered in due course, the method is applicable in the presence of the ions Li, Na, K, NH_4, $Cu^{\cdot\cdot}$, Mg, Ca, Sr, Zn, Cd, $Hg^{\cdot\cdot}$, Al, Ni, Co, Cl, PO_4, B_4O_7. All data are referred to one standard solution which is readily prepared of exact strength and which is permanent. The end point of the titration is clearly defined. When all is in readiness an estimation requires fifty minutes.

In 1877 Hinman [1] proposed to determine sulphuric acid as follows: To a slightly acid solution of a sulphate heated to boiling is added a small excess of a solution of barium chromate in hydrochloric acid, barium sulphate is precipitated, then the solution is neutralized with ammonia which precipitates the remaining barium chromate, the precipitates of barium sulphate and chromate are filtered off, and the chromic acid, determined in the filtrate by means of stannous chloride, is equivalent to the sulphuric acid in the original solution.

This method is limited in its application; in particular, metals forming chromates insoluble in the presence of ammonia as well as phosphates and borates interfere. Various modifications [2] designed to correct its inherent defects have been suggested without, however,

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[1] *Amer. Journ. Science and Arts*, **114**, 478.

[2] Andrews, *Am. Chem. Journ.*, **2**, 567; **32**, 476–480.

Marboutin and Molinié, *Bull. Soc. Chim.*, **17**, 950–955; **19**, 713–717. *Journ. Soc. Chem. Ind.* (1897), 1041; (1898) 874.

Reuter, *Chem. Ztg.* (1898), 357.

Telle, *J. Pharm. Chim.*, **7**, 165-170.

Bruhns, *Z. anal. Chem.* (1906), 573.

Komarowsky, *Chem. Zeit.*, **32**, 770.

Mitchell and Smith, *Chem. Soc. Proc.*, **25**, 291.

Repiton, *Monit. Scient.*, **24**, 382–384.

Holliger, *Stahl u. Eisen*, **30**, 1376–1378; *Z. Anal. Chem.*, **49**, 84–93; *Z. angew. Chem.*, **22**, 436–449.

Roemer, *Z. Anal. Chem.*, **49**, 490–492.

extending its usefulness. Thus, it having been shown that HCl is oxidized on prolonged contact with Cr_2O_7, the strength of the standard solution being thereby altered, trichloracetic acid was proposed to hold the $BaCrO_4$ in solution. In any case it is impossible to precipitate $BaSO_4$ in the presence of chromate without coprecipitation of the latter in some degree. For this reason and in order, further, to avoid the uncertainty arising from the instability of solutions of barium chromate, some authors recommend separate solutions of barium and chromate, the $BaSO_4$ being precipitated before the introduction of the chromate. Another way of avoiding the instability of acid solutions of barium chromate is to employ a mechanical suspension or cream of the salt. This idea would not seem to be in accord with good volumetric practice. Calcium carbonate has been used in place of ammonia, though with no very obvious advantages. Various means have been adopted for the estimation of the Cr_2O_7.

The volumetric solutions required in the proposed method are:

Normal Potassium Dichromate.—Dissolve 49.033 gms.[3] $K_2Cr_2O_7$, previously powdered and dried at 120° C., in sufficient water to measure 1000 c.c.

The solution is normal with respect to oxidizing power.

Tenth-normal Sodium Thiosulphate.—Measure 10 c.c. N/1 $K_2Cr_2O_7$ into a 100 c.c. glass-stoppered volumetric flask and make up to the mark. Measure 20 c.c. of this solution into a 500 c.c. Florence flask containing 1 gm. KI just previously dissolved in 20 c.c. dilute sulphuric acid (100 c.c. conc. H_2SO_4 + 900 c.c. water), rinse down the sides of the flask with 60 c.c. water, mix the liquids, cover the flask with a watch-glass and let stand six minutes. Dilute the liquid with 150 c.c. water and titrate the free I with a solution of sodium thiosulphate (25 gms. $Na_2S_2O_3 + 5H_2O$ in 1000 c.c.), adding starch indicator near the end. Divide 20,000 by the number of c.c. required and dilute each litre of the $Na_2S_2O_3$ solution to the volume indicated.

The above is essentially the method of Seubert and Henke[4] for the iodometric estimation of Cr_2O_7.

Third-normal Barium Chloride.—The solution is equivalent to the dichromate solution and contains 40.72 gms. $BaCl_2 + 2H_2O$ per litre.

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[3] The international atomic weights for 1913 were used throughout the investigation.

[4] *Zeit. f. ang. C.*, 1900, 1147; "Volumetric Analysis," Sutton, 1904, 184.

Measure 4 c.c. HCl (sp. gr. 1.12), 40 c.c. water and 10 c.c. barium chloride solution (about 43 gms. $BaCl_2 + 2H_2O$ in 1000 c.c.) into a 100 c.c. glass-stoppered volumetric flask, heat the liquid to boiling, run in 10 c.c. N/1 $K_2Cr_2O_7$, rinse down the neck of the flask with 10 c.c. water and without further heating add drop by drop with constant shaking a mixture of 15 c.c. ammonia water (sp. gr. 0.98) and 2 c.c. 36 per cent. acetic acid. Cool the mixture to the normal temperature, make up to the mark and filter with the aid of suction through an asbestos felt previously formed in the usual manner, then dried at about 110° C. Titrate 40 c.c. of the filtrate under the conditions specified in the standardization of the N/10 $Na_2S_2O_3$, except that 40 c.c. water are used in place of 60 c.c., the total volume of the solution during the six-minute period of standing being 100 c.c. Divide 20,000 by the number of c.c. N/10 $Na_2S_2O_3$ required, and dilute each litre of the $BaCl_2$ solution to the volume indicated. A new trial is then to be made with, if necessary, the slight readjustment required.

An estimation of SO_4 is carried out as follows:

Transfer the sulphate solution containing about 0.16 gm. SO_4 to a 100 c.c. glass-stoppered volumetric flask, dilute to a volume of 30 c.c., add sufficient HCl (sp. gr. 1.12) so that the total amount present is 4 c.c. (if acidity is unknown, first neutralize with ammonia), heat the liquid to boiling, run in 20 c.c. N/3 $BaCl_2$, again heat to boiling, run in 10 c.c. N/1 $K_2Cr_2O_7$, rinse down the neck of the flask with 10 c.c. water and without further heating add drop by drop with constant shaking a mixture of 15 c.c. ammonia water (sp. gr. 0.98) and 2 c.c. 36 per cent. acetic acid. Complete the experiment as specified under the standardization of the N/3 $BaCl_2$.

C.c. N/10 $Na_2S_2O_3$ required $\times 0.008 =$ gm. SO_4 originally taken.

The reaction between equivalent solutions of $K_2Cr_2O_7$ and $BaCl_2$ is expressed by the equation: $K_2Cr_2O_7 + BaCl_2 + H_2O = BaCrO_4 + K_2CrO_4 + 2HCl$. The resulting HCl retains in solution a considerable portion of the Ba. On neutralizing with ammonia all of the Ba is thrown out as chromate and half the Cr originally taken remains in solution.

A large number of preliminary experiments, the details of which it is hardly necessary to give, demonstrated the following points:

(1) When cold solutions of $K_2Cr_2O_7$ and $BaCl_2$ are mixed and neutralized, the precipitate of $BaCrO_4$ carries down soluble chromate in considerable and variable amounts.

(2) The same error in less degree occurs when the $BaCl_2$ solution is added to the diluted and boiling $K_2Cr_2O_7$ solution and the neutralization effected at the boiling point.

(3) The error is eliminated only when the $K_2Cr_2O_7$ and $BaCl_2$ solutions are mixed in the presence of sufficient HCl to prevent the precipitation of $BaCrO_4$, and then ammonia water is added drop by drop to the hot liquid; further, the ammonia water must be fairly dilute so that not too much $BaCrO_4$ is thrown out at once as the liquid approaches neutrality.

Acetic acid is unaffected by dichromate under the conditions of the procedure. 10 c.c. N/1 $K_2Cr_2O_7$ were measured into a 100 c.c. volumetric flask, 40 c.c. water and 1 c.c. 36 per cent. acetic acid were added, the liquid was boiled 1 minute, cooled and made up to the mark. 20 c.c. required 19.95 c.c. N/10 $Na_2S_2O_3$. An independent experiment done in the same manner required 20 c.c. N/10 $Na_2S_2O_3$.

The use of acetic acid widens the application of the method greatly. Numerous chromates insoluble in the presence of ammonia readily dissolve in acetic acid. The latter also permits of the application of the method in the presence of borates and, especially, of phosphates in limited amounts. It is highly important that the excess of acetic acid be not much greater than 0.5 c.c., which is nearly equivalent to 10 c.c. N/1 $K_2Cr_2O_7$. An undue excess would exert a marked influence on the solubility of the $BaCrO_4$ and lead to too high results.[5] The quantities of reagents specified are such that under the actual working conditions of the procedure the excess of acetic acid finally present is close to 0.5 c.c.

The method being designed for technical use, the volumes required to be handled are kept within moderate limits.

In the volumetric standardization of the $BaCl_2$ under the conditions specified various errors compensate each other so perfectly that gravimetric assays show very nearly theoretical results. Obviously this fact is of the highest importance in the practical operation of the method. If this were not so it would be necessary to standardize the $BaCl_2$ gravimetrically and apply a correction to the titration. In the course of the work two independent sets of reagents were prepared. First lot of $BaCl_2$: 10 c.c. yielded 0.3885 gm. $BaSO_4$,

[5] *Cf.* Bray, "A System of Qualitative Analysis for the Common Elements," *J. Am. Ch. Soc.*, 1909, 611–637.

equivalent to 0.4066 gm. $BaCl_2 + 2H_2O$. Second lot of $BaCl_2$: 10 c.c. yielded 0.3886 gm. $BaSO_4$, equivalent to 0.4067 gm. $BaCl_2 + 2H_2O$. Theory demanded 0.4072 gm. $BaCl_2 + 2H_2O$. Error = 0.1 per cent.

Ordinarily about 0.16 gm. SO_4 should be taken. If, however, the proportion of SO_4 is so small that 0.16 gm. cannot be taken without increasing unduly the concentration of the other ions, it is necessary to take into account the error arising from the solubility of the $BaCrO_4$, which, under the conditions, is represented by 0.3 c.c. N/10 $Na_2S_2O_3$ per 40 c.c. of the filtrate. For example, 10 gms. table salt were dissolved in sufficient water to measure 100 c.c. Volumetric and gravimetric estimations were made on 10 c.c. portions. 40 c.c. of the filtrate required 1.1 c.c. N/10 $Na_2S_2O_3$. The correction having been deducted, 0.0064 gm. SO_4 was indicated. $BaSO_4$ found: 0.0152 gm., equivalent to 0.0062 gm. SO_4.

Table I presents a large part of the experimental data and is self-explanatory.

Notes Supplementary to Table I.

a. Carefully recrystallized and dehydrated by gentle ignition; purity also established gravimetrically in the course of some previous work.

b. Cu^{++} does not interfere, provided care is taken to prevent the premature formation of cuprous salt. Should this occur, the titrating fluid becomes cloudy. Shaking and standing may clear it. The N/10 $Na_2S_2O_3$ should be added in small portions with vigorous shaking. The first disappearance of the blue color is taken as the end. The titration may also be carried out without starch indicator, the thiosulphate being run in until there is no further change in color and the liquid acquires a slight permanent opalescence.

c. Mg occasions a positive error variable between 1 and 2 per cent. The substitution of caustic soda for ammonia does not reduce this error.

d. Two independent experiments.

e. Although $SrCrO_4$ is readily soluble under the conditions of the procedure, the slight solubility of $SrSO_4$ greatly limits the application of the method in the presence of Sr.

f. Less the correction 0.3 = 2 c.c.

g. The salt was badly effloresced.

h. The study of this element led to the addition of the ammonia and acetic acid mixed. Alumina once precipitated by ammonia redissolves with great difficulty in so weak an acid as acetic. Further, precipitated alumina occludes soluble chromate. Under the conditions of the procedure the aluminium remains in solution or, at most, the liquid becomes slightly opalescent.

i. The usual formula with $7H_2O$ was assumed; hence the weight taken. The salt actually contained $6H_2O$.

TABLE I.

Typical Experiments on the Ions Na, K, Li, NH_4, Cu, Mg, Ca, Sr, Zn, Cd, Al, Co, Ni.

Solution	Portions taken	Volumetric		Gravimetric		Per cent. error
		$N/_{10}$ $Na_2S_2O_3$	SO_4	$BaSO_4$	SO_4	
2.367 gms. Na_2SO_4[a] in 100 c.c.	10 c.c.	20 c.c.	0.1600 gm.			0
2.904 gms. K_2SO_4 in 100 c.c.	10 c.c.	19.6 c.c.	0.1568 gm.	0.3822 gm.	0.1573 gm.	−0.3
1.832 gm. Li_2SO_4 in 100 c.c.	10 c.c.	19.95 c.c.	0.1596 gm.	0.3874 gm.	0.1594 gm.	+0.13
2.202 gms. $(NH_4)_2SO_4$ in 100 c.c.	10 c.c.	19.95 c.c.	0.1596 gm.	0.3867 gm.	0.1591 gm.	+0.31
4.162 gms. $CuSO_4+5H_2O$[b] in 100 c.c.	10 c.c.	20.05 c.c.	0.1604 gm.	0.3861 gm.	0.1589 gm.	+1.
2.006 gms. $MgSO_4$[c] in 100 c.c.	10 c.c.	20.1 c.c.[d]	0.1608 gm.	0.3865 gm.	0.1591 gm.	+1.1
4.108 gms. $MgSO_4+7H_2O$ in 100 c.c.	10 c.c.	20.3 c.c.	0.1624 gm.	0.3886 gm.	0.1600 gm.	+1.5
	.....	20.3 c.c.	0.1624 gm.	.....	.....	+1.5
	.....	20.4 c.c.	0.1632 gm.	.....	.....	+2.
2.269 gms. pure, pp., air-dried $CaSO_4$+30 c.c. HCl +water to make 200 c.c.	20 c.c.	15.6 c.c.	0.1248 gm.	0.3017 gm.	0.1242 gm.	+0.48
Pure $SrSO_4$[e]+20 c.c. HCl+water to make 200 c.c., shaken and filtered	20 c.c.	2.3 c.c.[f]	0.0160 gm.	0.0414 gm.	0.0170 gm.	
4.792 gms. $ZnSO_4+7H_2O$ in 100 c.c.	10 c.c.	20.2 c.c.	0.1616 gm.	0.3901 gm.	0.1605 gm.	+0.7
4.275 gms. $3CdSO_4+8H_2O$[g] in 100 c.c.	10 c.c.	22.4 c.c.	0.1792 gm.	0.4303 gm.	0.1771 gm.	+1.
3.954 gms. $AlK(SO_4)_2+12H_2O$[h] in 100 c.c.	10 c.c.	19.85 c.c.	0.1588 gm.	0.3853 gm.	0.1586 gm.	+0.1
3.503 gms. $Al_2(SO_4)_3+16H_2O$ in 100 c.c.	10 c.c.	20 c.c.	0.1600 gm.	0.3856 gm.	0.1587 gm.	+0.8
4.686 gms. $CoSO_4+6H_2O$[i] in 100 c.c.	10 c.c.	21.5 c.c.	0.1720 gm.	0.4135 gm.	0.1702 gm.	+1.
4.380 gms. $NiSO_4+6H_2O$ in 100 c.c.	10 c.c.	19.8 c.c.	0.1584 gm.	0.3808 gm.	0.1567 gm.	+1.

Phosphates.—0.5 gm. $Na_2HPO_4 + 12H_2O$, 4 c.c. HCl (sp. gr. 1.12), 40 c.c. water and 10 c.c. N/3 $BaCl_2$ were mixed in a 100 c.c. flask, the liquid was heated to boiling, 20 c.c. water were added, then drop by drop with constant shaking a mixture of 15 c.c. ammonia water (sp. gr. 0.98) and 2 c.c. 36 per cent. acetic acid was added. Near the end a considerable amount of precipitate appeared which failed to redissolve on shaking or boiling. There was much phosphate still in solution. Various other amounts of phosphate were tried under the same conditions. The results are given in Table II.

Blank [6] tests were done in the presence of various amounts of phosphate. The results are given in Table III.

TABLE II.

$Na_2HPO_4 + 12H_2O$ taken	Precipitate
0.5 gm.	Considerable.
0.3 gm.	Small.
0.25 gm.	Slight.
0.2 gm.	Slight.
0.15 gm.	Barely visible.
0.1 gm.	None.

Blank tests were done in the presence of $HgCl_2$ (0.45 gm.) and $Na_2B_4O_7 + 10\ H_2O$ (0.5 gm.), respectively. Neither substance interfered.

TABLE III.

$Na_2HPO_4 + 12H_2O$ taken	$N/_{10}$ $Na_2S_2O_3$ required	Per cent. error
0.5 gm.	21.3 c.c.	+6.5
0.3 gm.	20.6 c.c.	+3.
0.25 gm.	20.3 c.c.	+1.5
0.2 gm.	20.3 c.c.	+1.5
0.15 gm.	20.05 c.c.	+0.25
0.1 gm.	20 c.c.	0

Iron.—Fe·· is, of course, inadmissible. Fe···, if present in the final titration, liberates I from KI and vitiates the result. Fe··· may be completely removed from the solution as basic ferric acetate by boiling the liquid after adding the mixture of ammonia and acetic acid. Unfortunately coprecipitation of soluble chromate

[6] By blank test is to be understood a test in which equal volumes of the $K_2Cr_2O_7$ and $BaCl_2$ solutions are taken, as in the standardization of the $BaCl_2$.

occurs. The error is therefore negative and is too considerable to be neglected even in rough work. For example, the error in an experiment on ferric alum [$FeNH_4(SO_4)_2 + 12H_2O$] amounted to —8 per cent.

Chromium.—A large number of experiments was done on chrome alum. The results were much too high and very erratic. Indications pointed to the formation of chromous salts.

Analytical Department, Lehn & Fink, New York.

THE PATENT MEDICINE PROBLEM.[1]

By M. I. Wilbert, Washington, D. C.

The patent medicine problem, as it presents itself to American pharmacists to-day, is neither novel nor popular, and its continued growth has long since been recognized as a menace to the development of pharmacy as a desirable occupation. The business itself has developed as the joint offspring of cupidity and credulity and from a very early period has been the one object regarding which members of the various branches of the drug trade have differed on more frequently and more widely than on any other.

While it is generally recognized that the manufacture, sale and use of so-called patent medicines should be considered primarily as a public health problem, the business from the drug trade point of view also involves economic questions which cannot well be ignored and which have, at times at least, quite overshadowed all public health considerations. That the economic feature of the problem is on the increase rather than decrease is evidenced by an editorial in the *National Druggist* (1912, v. 42, p. 414) which asserts that the number of establishments engaged in the manufacture of patent and proprietary medicines in 1899 was 2,154, and in 1909 was 3,642. The value of the products at the factories in 1899 was $88,791,000, and in 1909 was $141,942,000, an increase of approximately 70 per cent. in ten years.

Whether the public health or the economic side of the problem is to be given the preference in the near future is a question that is well worth considering, and one which by the recent action of the

[1] Presented at a meeting of the City of Washington branch of the American Pharmaceutical Association, February 18, 1914.

American Pharmaceutical Association is once more set squarely before the American pharmacists for reply or action.

The patent medicine problem as it is now before the members of the American Pharmaceutical Association for discussion, was outlined in an editorial by the general secretary of the Association, in the *Journal* for April, 1913 (pp. 425–428). This editorial points out that the duty of the pharmacist to himself and to the public, in connection with patent medicines, is to define if possible the legitimate status for remedies of this kind, and to differentiate between acceptable and non-acceptable preparations.

This proposition was presented to the Council of the American Pharmaceutical Association at the Nashville meeting, and after considerable discussion it was agreed to appoint a Commission on Proprietary Remedies to consider the following general propositions:

"1. To inquire into and report to the Council from time to time upon the general subject of proprietary medicines, in their relations to pharmacy, medicine and the public health.

"2. To inquire whether any of the proprietary medicines, commonly known as patent medicines, contain alcohol or narcotic drugs in sufficient amount to render them liable to create a drug habit, or to satisfy such habits where otherwise created.

"3. To inquire whether, or to what extent, the commonly advertised patent medicines contain potent drugs in sufficient amount to render them dangerous in the hands of the laity.

"4. To inquire into the extent to which patent medicines are fraudulently advertised, or differ in properties or origin from the claims made for them, and the extent to which they are advertised for the cure of diseases generally recognized by the medical science as at present being incurable." (*J. Am. Pharm. Assoc.*, 1913, v. 2, p. 1195.)

As the Commission has, so far as known, made no report to the Council of the American Pharmaceutical Association, there is, as yet, no indication as to what will or will not be the attitude of this Commission toward the preparations now on the market or to be marketed in the future. Some idea of the stand that must be taken by the members of the Commission if they desire to make for progress rather than retrogression is evidenced by what has already been accomplished, not alone by the American Pharmaceutical Association, but also by other related organizations, particularly the American Medical Association.

Not to go too extensively into the history of the agitation relating to the manufacture and sale of patent medicines, more popularly designated as nostrums, we may well confine ourselves to the published records of the two national associations directly interested: the American Pharmaceutical Association and the American Medical Association, both organized somewhat over sixty years ago.

The American Medical Association almost annually, from the time of its preliminary meeting in the city of New York, in 1846, to its reorganization at Saratoga Springs in 1902, adopted resolutions condemning nostrums and secret remedies of all kinds, and pointed out objectionable features connected with them. Previous to the reorganization of the Association on the present basis, however, little or nothing of practical value was accomplished.

The American Pharmaceutical Association has also devoted considerable time and space to the discussion of problems connected with the manufacture and sale of patent and proprietary remedies. A cursory review of the proceedings of the Association suggests the rather interesting fact that this agitation appears to have developed in cycles and to have been markedly acute in decennial waves, the maximum height of the agitation being evidenced in the early years of the decennium. Thus, beginning with the Proceedings for 1853, the second meeting of the Association, we find the following resolution, which was, on motion of Joseph Laidley, substituted for one previously offered by C. B. Guthrie, and adopted by a majority of the members present:

"*Resolved,* That the American Pharmaceutical Association believes that the use and sale of secret or quack medicines is wrong in principle and is in practice attended with injurious effects to both the profession and the public at large, and believes it to be the duty of every conscientious druggist to discourage their use.

"*Resolved,* That this Association earnestly recommend to our pharmaceutical brethren to discourage by every honorable means the use of these nostrums; to refrain from recommending them to their customers; not to use any means of bringing them into public notice; not to manufacture or to have manufactured any medicine, the composition of which is not made public; and to use every opportunity of exposing the evils attending their use, and the false means which are employed to induce their consumption." (*Proc. Am. Pharm. Assoc.,* 1853, p. 17.)

The agitation in the next decennium was largely centered about the manufacture of fluid extracts and the development of proprietary rights in preparations of this type, and ten years later we find a similar line of activity developing in connection with elixirs, which at that time were so popular. At the end of another decennium, however, the attention of members of the Association was again directed to patent medicines of the nostrum type by a resolution offered by Prof. A. B. Prescott, of Ann Arbor, to the effect that a committee of three members be appointed to agree upon the most feasible and suitable legislation to secure a sufficient statement of the composition of proprietary medicines, on the package of the same, and the more feasible and efficient action to be taken by the Association in regard to the matter. The committee appointed consisted of Albert B. Prescott, Frederick Hoffmann and Charles Rice. This committee, at the succeeding meeting of the Association, presented a lengthy report on the nature of desirable legislation regarding the manufacture and sale of proprietary remedies, and also a draft of an act regulating the sale of proprietary medicines. The committee in its report offered a resolution which was subsequently adopted by the members of the Association present, to the effect "that it is the deliberate opinion of this Association that the labels of proprietary medicines ought to carry a statement of their constituents." (*Proc. Am. Pharm. Assoc.*, 1885, v. 33, pp. 394–398.) As evidence of the need for action along these lines the committee said in part:

"All medicines, and articles used as such, concern the health of those who use them and put dependence upon them. By action or failure of action, a medicine is liable to prove hurtful when misapplied. Therefore, it is the right of a purchaser of a medicine to receive information of its constituents, their names and proportional quantities. And it is a legitimate act of the State—so far as it deems expedient—to see to it that such information, in printed form, is placed upon each package of articles of medicine, as a condition of their legal sale.

"Moreover, legislation requiring the composition of medicines to be given to the consumer is entirely in accord with the spirit of the institutions of the United States, because it is legislation tending to secure him in the means of self-preservation. The purchaser of a medicine is provided with a record of its constituents, given in terms defined by published standards: now he may guide himself,

in his own discretion or with professional aid, by the information given in the record of constituents, or he may neglect to so guide himself, and depend upon advice given on the wrapper of the medicine, in the exercise of his personal responsibility. The State has done its duty, and given the individual the opportunity for the exercise of discretion. The opportunity has an educational value to the individual."

The following year the Committee on Legislation, in its report of progress (*Proc. Am. Pharm. Assoc.*, 1886, v. 34, p. 10, 154, 155), included a resolution to the effect that:

"WHEREAS, All medicines concern the health of those who use them; and

"WHEREAS, The purchaser of a medicine selected by himself has the right to receive information of its constituents and their quantities; and

"WHEREAS, The report and the draft of a law regulating the sale of proprietary medicines, which were accepted by the American Pharmaceutical Association at its meeting held in September, 1855, embrace a method whereby the above-mentioned objects may be secured; therefore, be it

"*Resolved*, That the President and other officers of the Association be authorized and instructed to present printed copies of the reports and of the action had in this Association upon said reports, to the Governors, to the Speakers of the Senates and Houses of Representatives, and to the State Boards of Health, of the different States of the United States; also to offer any services wherein these authorities may consider the coöperation of this Association desirable or useful."

This preamble and resolution was vigorously discussed and a motion that they be stricken from the minutes of the Association was defeated. The report of the Committee was then on motion accepted, and finally on motion of C. Lewis Diehl, seconded by C. S. N. Hallberg, the preamble and resolution were adopted.

Despite the endorsement given the report of the Committee on Legislation, little or nothing of a practical nature appears to have been done. During the early years of the succeeding decade a few isolated papers on patent medicine abuses, from a public health point of view, were presented, but their readers found no following and the resolutions they offered appear to have been overlooked or ignored, while much of the time of the Association was devoted to the dis-

cussion of a plan or plans to remedy the "cutting of prices." The seriousness with which time was wasted on the discussion of the several plans that were suggested at that time serves well to illustrate the comparative importance that has been accorded the purely economic side of this problem by various branches of the drug trade.

At the semi-centennial meeting of the American Pharmaceutical Association, in 1902, several papers were again presented, bearing on existing abuses in connection with patent and proprietary remedies. These papers dealt principally with the abuse of so-called proprietary medicines and their use by physicians, and perhaps contributed somewhat at least to the renewed interest on the part of the American Medical Association in matters relating to the use of secret or semi-secret remedies by medical practitioners.

At the meeting of the American Medical Association in New Orleans in 1903, a number of papers were presented criticising medical journals for the nature and kind of advertising carried by them, and a resolution adopted by the then Section on Materia Medica and Pharmacy condemned much of the advertising then carried in the *Journal* of the Association itself. At this meeting of the Association provision was also made for pharmaceutical membership in the American Medical Association, and at the meeting in Atlantic City the following June a number of pharmacists were elected and the discussions on materia medica subjects, with the resolutions adopted at Atlantic City in 1904, no doubt were directly responsible for the inauguration of a Council on Pharmacy and Chemistry, the object of which was to endeavor to differentiate between good and bad proprietary remedies used by or offered to physicians.

A preliminary meeting of persons interested was held in Philadelphia on December 29, 1904, and the Council itself was organized in Pittsburg on February 11, 1905. This Council was immediately set to work and by June of the same year the comprehensive and at that time startling report on the acetanilide mixtures was published in the *Journal of the American Medical Association* and, as was expected, precipitated the wrath, not alone of pharmaceutical manufacturers, but also of medical journals that depend so largely on their advertising pages for existence. The so-called acetanilide report served, however, to arouse the better class of medical men to an appreciation of their duty as professional men and the endorse-

ment thus secured has contributed much to maintain the Council despite the attacks of moneyed interests within and without the membership of the Association.

The work of the Council was later in the year efficiently augmented by the series of articles originally published in *Collier's Weekly*, by Samuel Hopkins Adams, on the "Great American Fraud," and subsequently reprinted in pamphlet form by the American Medical Association. The Food and Drugs Act of June 30, 1906, also contributed its share in support of the work of the Council. These several agencies have been further augmented by the stand taken by the Commissioner of Internal Revenue in regard to alcohol containing nostrums and by the assistance given by various state officials entrusted with the enforcement of local food and drug laws, so that at the present time there is considerable evidence to show that the efforts of the Council on Pharmacy and Chemistry have made a distinct impression on thinking laymen as well as on the more progressive members of the American Medical Association.

Following the inauguration of the Council on Pharmacy and Chemistry, the American Medical Association organized a chemical laboratory in the Association building, and this laboratory, in addition to the work on "proprietary remedies," has devoted considerable time to the examination of so-called "patent medicines" or "nostrums." The resulting analyses are usually published in the *Journal* and have been in part, at least, compiled in book form in a volume entitled "Nostrums and Quackery."

This book has recently been reprinted in enlarged form, and its increasing circulation among well-informed laymen will contribute much to a better understanding of the patent medicine problem from a public health point of view, and should serve to prevent any possible retrogressive action on the part of the American Pharmaceutical Association as an Association.

In summing up this brief and admittedly incomplete survey of recent accomplishments to solve the "patent medicine" problem, it would appear that the questions involved are not to be considered as being answered until they are answered correctly, and that from the point of view of the public the influence of "patent medicines" on the health and welfare of the individual is the only factor deserving of consideration. Bearing this latter fact in mind, it would appear desirable that all branches of the drug trade give the patent

medicine problem renewed and serious consideration, and make an honest effort to adjust their interests in accord with the interests of the public and thus effectually counteract the frequently made assertion that the economic questions involved must outweigh all others so far as the drug trade may be concerned.

A PLEA FOR MORE EFFECTIVE CO-OPERATION AMONG PHARMACEUTICAL ORGANIZATIONS.

By W. B. Day.

Even a superficial observer of pharmaceutical affairs must have been struck by the increase in the number of organizations which depend upon pharmacists for their membership. Not only have we the two great national associations but each commonwealth is more or less thoroughly organized with its state, county and city associations.

At first glance this situation appears most encouraging and seems to show an appreciation of the value of these organizations and a commendable spirit in affiliating with them and sharing their endeavors and their advantages, but when we look into the matter more closely we find that with all these opportunities for affiliation with an active society, the majority of pharmacists remain indifferent.

There are nearly fifty thousand drug stores in the United States and probably over seventy-five thousand qualified pharmacists. Less than five per cent. of these are members of the American Pharmaceutical Association, and certainly not more than twenty per cent. are members of the National Association of Retail Druggists. Very few state associations include within their membership more than a fifth of the qualified pharmacists of their respective states.

In some of the larger cities strong local associations exist, but, on the other hand, there are many counties and cities where organization has never been effected, or if effected has perished through disuse and neglect. Contrast with this the situation in Great Britain, where, of all European countries, the conditions most resemble our own. The last report of the Registrar of the Pharmaceutical Society of Great Britain shows 7788 members out of 16,608 qualified pharmaceutical chemists and chemists and druggists. Allowing for those who have retired from business or are engaged in some other line

of work, it is estimated that nearly two-thirds of the chemists and druggists of Great Britain are members of the national society. And the membership is growing steadily; the increase has been twenty-five per cent. during the last ten years.

The only reason for the existence of any organization is service to its members and to the profession which it represents. Are present conditions favorable to such service? Is there not a wasteful duplication of effort? Should there not be a better correlation of organized pharmaceutical activities?

Pharmaceutical associations have done wonderfully well in legislation, in education, in the development of scientific pharmacy and in the spreading of a knowledge of both technical and business methods. Co-operation has solved many perplexing questions; dangers have been bravely faced, evils have been overcome, and yet a start has scarcely been made.

The attention of pharmacists has often been called to the changing conditions which vitally affect our calling. Not only are these evidenced by the spread of commercialism, the development of chain stores and syndicates, the increased dispensing by physicians and the multiplication of hospitals and dispensaries, but, deeper than these—the drift of social legislation which in Great Britain has produced the National Insurance Act and in Germany has resulted in a state-controlled industrial insurance. We may as well face the possibility, if not the probability, of state-paid medical service, including state-furnished medicines in our own country, during the next generation. Judging from the lack of recognition accorded to pharmacists in our army, we are held in but low esteem by the federal government at the present time; physicians, dentists and even veterinarians rank far above us in the largest arm of the government service.

It is high time that all pharmaceutical organizations should carefully consider a general affiliation and correlation such as shall assign to each its special field and avoid the present overlapping and duplication. More effective work will be possible only through such mutual relations, and will deserve and receive wider support by pharmacists. A united body of seventy-five thousand pharmacists would command respect and insure fair treatment in the coming readjustment and division of labor that is sure to come as a part of the social movement.

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EFFICIENCY IN DRUG STORES.

By C. C. Honsaker, P.D.

This is the age of specialization. Lawyers, doctors, mechanics and ministers are specialists; when needed they are consulted, they need and consult one another. We all recognize that no one man knows it all. Just as there are sick people that need competent counsel, so there are sick businesses that need attention from experts.

The old time business expert was and is, in fact, somewhat like the old-time doctor. He administered tonics and palliatives instead of getting at the seat of trouble.

By keeping records and making tests, chemists, pharmacists and physicians have been able to standardize certain medicines.

It has been but recent, however, that the business doctor was able to diagnose and apply a standardized remedy, or specific, to a sick business.

This, however, has been accomplished by the two great efficiency engineers, Emerson, of New York, and Taylor, of Philadelphia. These men have gathered together the threads of activity, and woven them into the science known as efficiency. Efficiency means the ability to accomplish. Personal efficiency is the mental and physical ability to find, and take, the best, easiest, and quickest way to the desirable things of life.

These principles are not new, you and I employ them every day, at least some of them.

Just as Sheldon has analyzed the sale, so has Emerson analyzed the operations and procedures of hundreds of successful men, and found that thirteen (13) principles were involved, in part or whole, by them in their accomplishments.

There are seven (7) practical principles, and six (6) ethical ones. To-day we will be concerned with the practical ones only.

A sick business like a sick body always has one symptom that gives the most trouble, from which, tracing backward, the cause can be located by the trained expert. You all know what this symptom of unscientific business is in the drug world. The rancorous sore in the side of the drug business is the long hours. This, however, is only a symptom or effect. The cause is much deeper.

This thirteen (13) to fifteen (15) hour day is driving the best

men out of the business. The great cry of the retail druggist is, "that we cannot get competent men."

The P. C. P. and other colleges give men good scientific training, which most of them never have an opportunity to use. The drug journals contain article after article about building up business; these are read, possibly, but seldom put into actual practice. The various organizations ask for action and attendance, but get little or none, although the advantages to be gained are obvious. Tradition has established a routine in the drug store, which very few have been able to break away from, and those who do are usually condemned.

There is no hope for the man who works thirteen (13) to fifteen (15) hours a day. It's a losing game every way one looks at it.

The philosophy of the business must be changed. It must be studied from the standpoint of the sale.

Business is buying and selling. Selling is our objective point. Our drugs and merchandise must be organized toward making the sale. The sale is the point from whence the money comes. Sales and quick ones. The five (5) and ten (10) cent stores are based on the principle of small, quick sales. Your average sale in the drug store is from fifteen (15) to eighteen (18) cents.

Efficiency, then, is the keynote. It is the only salvation. Mr. Emerson would probably try to pull the manager out of the mass of details first, so that he, the manager, could get a perspective of his business. So we will, on that assumption, try and apply the seven (7) principles to the manager first, since a business is but the lengthened shadow of a single individual.

There is one thing that the druggist is fortunate in having, and that is twenty-four (24) hours a day. The trouble is that he does not use it advantageously. Twenty-four (24) hours, then, is a fixed quantity, fixed and unchangeable. Time is what we are trying to save, therefore we will use it as our basis.

Standards.

The first principles of scientific management is "Standards." A standard is a reasonable attainable maximum of desirability. Before standards can be established, however, many records must be made.

A record is anything that gives information of any kind. Records play an important part in everything we do. Baseball furnishes an excellent example of the use of records.

What we want, then, is a record of what the druggist does with

his fourteen (14) hours each day. This is accomplished by the use of a special chart, conveniently divided into five (5) minute periods or squares. The efficiency engineer keeps an account of every five (5) minutes of the fourteen (14) hours, for a period of time, say for one (1) week. At the expiration of the allotted time the various minutes are classified, wasted time analyzed, and a standard established for each of the various operations.

Possibly he filled fifty (50) prescriptions during the week and expended approximately thirteen (13) hours. The standard time, then, for filling one (1) prescription is fifteen (15) minutes under normal conditions.

You will say that it is impossible to establish a standard for such a changeable and indefinite operation. That is what they all say. If it were easy it would have been done long ago. It can be done with a complex operation, having many factors, as well as with the simpler operations, such as shoveling, shaving or even writing your name.

You now have an annotated topography of your duties. Your next move is to organize the operations into logical sequence. That brings us to the second principle.

Planning.

You now plan your operations. This you can do intelligently, since you are dealing with known facts. At this point of the reorganization your business policy changes. You become the power behind the business. The customer, doctor, salesman and others cease to mould your business to suit them. You are becoming aggressive. You know how long it takes to make a sale. You make the sale and get away. The salesmen come and go when you say; not when they want to.

To plan, though, is not enough. The Pennsylvania Railroad might plan to run the twentieth century limited from New York to Chicago; but, unless schedules were made, this plan would be useless. One crew might run at breakneck speed and send the train to the junk pile; another so slow as to consume unnecessary fuel. So, in order to avoid those conditions, definite schedules are carefully made. Consequently, the next principle to be applied is schedules.

Schedules.

A plan is a general statement.

A schedule is a definite itemized statement.

So, now, each operation is looked after minutely, a definite time

for its beginning and completion established. Everything in the store is now beginning to organize itself toward carrying into effect this new element of activity. Everything must fall in line. You do not wait for anything. Your motive is based upon known facts, and you know that you are right.

To be scientific there must be a way of showing results. There is, and it is calculated by the following method.

Divide the actual number of hours employed by the standard number, and the result is your efficiency of supply, *e.g.*, say the time wasted by various leaks to be three hours, and your standard is fourteen hours, the actual number of hours employed is the difference between fourteen hours and three hours, or eleven hours. This eleven hours divided by the fourteen hours gives 78, your per cent. of efficiency of supply.

However, a man may be 100 per cent. efficient in supply of time, and yet not be efficient in the use of time, *e.g.*, a pharmacist spends thirty minutes in compounding one prescription. His standard accomplishment for thirty minutes is two prescriptions. Actual accomplishment, which is one prescription, divided by standard accomplishment, which is two prescriptions, shows his usage of time to be 50 per cent.

These same principles, remember, apply to equipment and material as well as time. You may be efficient in supply and not in use. You may be efficient in use and not in supply. You attain maximum efficiency only when you are efficient in both. This is calculated as end efficiency. End efficiency is computed by multiplying your supply of time efficiency by your efficiency of use.

The next principle is *despatching.*

Planning, as you have seen, means looking ahead, deciding what is to be done, how much time is to be allotted the stunt, and what material and equipment are necessary to its accomplishment.

Schedules assign to each stunt a definite time and place, and definite quantities and qualities of material. They also list the equipment necessary, both as to quantity and place, and the standard time for the operation of equipment. It is not enough to establish standards for time, material and equipment. It is not enough to plan ahead. It is not enough to write schedules, no matter how elaborate and perfect they may be.

You must have action. In other words, the work or stunt must be despatched. Some of the well known examples of despatching

are the umpires at a professional baseball game, the directing "next" of a porter in the barber shop, and the train despatcher.

The antithesis to despatching is procrastination.

Procrastination is nearly always due to a tired body or brain; again, the accusing finger points to the long hours. How can a man despatch an important operation or communication who is submerged by multifarious details? A train despatcher as well as an umpire must be up and above the thing he is directing.

Connie Mack's method of directing from the bench is better than the old style of directing from the field.

The principle of despatching is a simple one. It means that when the time comes to do a thing you should have everything on hand and prepared to do it, and do it.

Standardizing conditions.

This is the fifth principle of efficiency. This is the principle which is universally misapplied and misconstrued to mean efficiency. Mention efficiency to the average druggist and he will tell you that he has the most efficient store in town. What he means is that he has systematized his store from a certain standpoint. Efficiency implies system, but system does not by any means imply efficiency. You can do a thing systematically wrong.

From the moment the first principle is applied you began rearranging and standardizing conditions. This is an indication of the interdependence of the thirteen principles.

By learning each of the thirteen principles you apply the fifth principle consciously, and, therefore, more fully and effectively.

There must be a place for everything, but that place can only be found after many trial conditions. At this point I wish to call your attention to the greatest loss in the drug business. The druggist finds himself doing many things which could be done by subordinates; such as dusting, running errands, looking up phone numbers, selling stamps, dispensing soda water, etc. While learning the business he did not mind doing it, because he looked forward to the time when he would take on larger responsibilities. The time came with the responsibilities, but the menial labor remained just the same. How can a man, who fills the capacity of a menial, command respect? Justice to all includes justice to self.

There are thousands of five and ten cent sales made in the drug store. You cannot afford to waste energy making them. They must sell themselves. They are what might be termed trailers, such as

corn cures, epsom salts, seidlitz powders, etc. You can only afford to spend energy on larger sales.

This capacity to assign yourself, subordinates, material, etc., is calculated as efficiency of assignment. Consult your records, find the most profitable hour of employment. This is your standard worth for an hour. For example, suppose that for a given hour your efficiency of supply was 91.7 per cent.; in other words, that you profitably employed forty-five minutes out of the sixty in that hour. Your efficiency of use was 85 per cent.; in other words, you folded, labelled and packed eighty-five seidlitz powders during that hour, where your standard number for that hour should have been one hundred. The end efficiency of supply and use, therefore, was eighty-hundredths of 91.7 per cent., or about 78 per cent. Since a girl might have folded, labelled and packed those eighty-five powders in forty-five minutes, and her wages for the forty-five minutes would have been twenty cents, the actual commercial value of what you accomplished during that hour was twenty cents. For the purpose of illustration, let us fix your standard worth at $1.00 for the hour. Twenty cents is 20 per cent. of $1.00; this is your efficiency of assignment for that hour. Your end efficiency for supply, use, and assignment is therefore 85 x 91.7 x 20 per cent., or 15.5 per cent.

Efficiency of assignment is measured by the ratio between actual value of what is accomplished or produced in a given time or from a given material or a given equipment and the standard value of production for such time, material or equipment.

All the work in learning and applying the first five practical principles of efficiency has been not only leading up to the sixth principle, but actually compelling you to apply it.

The sixth principle is *standardized operations.*

It is obvious that there is only one best, easiest and quickest way to do any given thing.

There may be one hundred different ways of doing a thing. This brings the case under the mathematical law of probability. The *chance* that you may happen upon the one best, easiest and quickest way is only one in a hundred. To show how slight are the chances of happening to choose the right operation, Mr. Emerson cites the case of an executive whose work he was called upon to study. This man's working day was fifteen hours, and he was always "terribly busy." As he did not plan his work, but simply turned feverishly from one task to another as they presented themselves, he wasted

twenty-five per cent. of his time. This reduced his efficiency of supply to 75 per cent.

Because he worked too many hours a day to maintain a standard condition of health and mental vigor, he not only procrastinated, dragged his work and kept others waiting, but made many blunders. The correction of these, where correction was at all possible, consumed a great deal of time. Taking into consideration his slow accomplishment, subtracting the amount of time wasted in correcting blunders, and the amount of time consumed in doing things wrongly, which could not be corrected, his efficiency of use was greatly reduced. Since he was too busy and too harassed to plan his work, he did not standardize any of his conditions or operations, leaving these matters entirely to chance, with the result that his efficiency of use of time was only 60 per cent. Because he did not plan or study, it naturally resulted that he spent a great deal of his time doing unnecessary things, as, for example, keeping records, that were neither immediate, reliable, adequate nor permanent. He also wasted hours blundering along with trivial details that ought to have been unloaded upon a subordinate who would have done them far more efficiently.

For these reasons his efficiency of assignment was only 40 per cent., and his end efficiency (75 x 60 x 40) was 18 per cent. By means of the thirteen principles of efficiency he might have accomplished just as much with far better quality in three hours as he had been accomplishing in fifteen hours. You know an analogous case.

To get back to standardized operations. This is the phase of efficiency that you mostly read about in the magazines; it involves time and motion study.

Without going into detail, I have tried to give you a perspective of the application of the principles of efficiency. This skeletonized elucidation leaves many questions unanswered that will naturally arise in your mind concerning their application to the drug business. You may not be able to see how they could possibly be applicable in the face of so many uncertainties, such as occur in the drug business.

Like a Socialist I answer by saying that those uncertain obstacles would not exist under proper management. The drug business to-day is governed by outside influences. The task we have is to regain control and manage according to a definite business policy.

You do not know what to charge for a prescription, because you have not standardized the operation of compounding. It is difficult, that is why it has not been done, but it *can* be done.

The seventh and last practical principle is written standard practice instructions. School text books, periodicals and the pharmacopœia are written standard practice instructions.

It is a difficult thing to change one's style of doing anything; therefore, it is necessary to strike a form, and to do this definite instructions must be carefully followed until it can be done with little or no conscious effort.

PROGRESS IN PHARMACY.

A Quarterly Review of Some of the More Interesting Literature Relating to Pharmacy and Materia Medica.

By Martin I. Wilbert, Washington, D. C.

Interest in matters relating to pharmacy appears to be about equally divided between progress in the revision of the Pharmacopœia of the United States and matters relating to legislation designed to further restrict the sale of opium, cocaine, and other potent or habit-forming drugs.

Two additional instalments of abstracts of proposed changes with new standards and descriptions for the United States Pharmacopœia, ninth revision, have been published and distributed. The first of these, a pamphlet of 59 pages, designated Part II, embraces most of the drugs of vegetable and animal origin and presents more comprehensive changes than any one of the other instalments of changes so far published.

The *Chemist and Druggist*, London (1914, vol. 84, p. 565), in commenting on the proposed changes in the pharmacognosy of the U. S. P., voices the opinion that the general indications are that the monographs in the U. S. P. IX will be quite an advance upon those included in the present Pharmacopœia.

Part III of the abstract of proposed changes embraces most of the waters, solutions, spirits, extracts, fluidextracts, resins, tinctures, and miscellaneous galenicals. Pharmacists generally will be pleased to learn that all of the important changes proposed for the several official galenical preparations can be adequately reflected in somewhat

less than 29 printed pages. This fact would appear to indicate that many of the official formulæ have been found to be satisfactory and that the members of the Executive Committee of Revision have exercised due care in the making of changes.

Commenting on the recently published abstracts of laws regulating the production, sale, and use of poisons and habit-forming drugs in this country, the *Pharmaceutical Journal,* London (1914, vol. 92, p. 278), says:

The poison legislation of the United States consists of a multiplicity of statutes of a not very effectual character, and a fundamental alteration of the law seems to be desired. During the year 1912–1913, over forty State, territorial, or similar Legislatures were in session, and nearly if not quite all of these bodies enacted some form of legislation designed directly or indirectly to affect the sale and use of poisons. But, notwithstanding this abundance of legislation, the poison laws of the United States are admittedly still far from perfect.

"*The Harrison anti-narcotic bill,* so-called, is still pending in the Senate, with some probability that the original bill in a slightly amended form will become law during the present session of Congress. It is perhaps unfortunate that the subject of Federal anti-narcotic legislation has been unnecessarily complicated by the introduction of a number of amendments that can in no way assist in developing the primary object of the bill and will at best serve to complicate its enforcement should it become law."

Boyland Bill.—The recently enacted New York State law, known as the Boylan Bill, prohibits the sale of habit-forming drugs except on the prescription of a licensed physician, but the provisions do not apply to the sale of domestic and proprietary medicines actually sold in good faith as medicines and not for the purpose of evading the law, "providing such remedies or preparations do not contain more than two grains of opium, or one-fourth grain of morphine, or one-fourth grain of heroin, or one grain of codeine, or ten grains of chloral or their salts in one fluidounce, or if a solid preparation in one avoirdupois ounce, nor to plasters, liniments, and ointments for external use only." If the prescription calls for more than four grains of morphine, thirty grains of opium, two grains of heroin, six grains of codeine, or four drachms of chloral, the authority for the prescription must be verified.—*Pharm. Era,* 1914, vol. 47, pp. 199, 200.

International Opium Conference. (Editorial.)—Discusses a report on the correspondence respecting the second International Opium Conference. It appears that Greece has refused to sign without stating any reason, while Turkey has refused to take any part whatever in the Conference. Germany and Russia were also not ready to ratify the Convention, although they have signed. In spite of these facts it is claimed by the delegates that matters have advanced considerably and that a long step has been taken toward the attainment of unanimity.—*Chem. and Drug.,* 1914, vol. 84, p. 458.

Commenting on the above, Xrayser II (p. 491) says: "The Opium Convention, like Mahomet's coffin, is suspended between heaven and earth, and while in that state of suspense it is worthless as an instrument for any practical purpose. But while the Convention itself may fail as an administrative force, I hope its educational value will not be lost sight of, and that we as chemists will do what we can, each in his own sphere, to limit the evils which the Convention in its essential features was intended to abolish. There always will be a legitimate demand for and use of cocaine and morphine, and there will also probably always be an illegitimate demand. If we conscientiously set ourselves to discourage the latter by a judicious method of satisfying the legitimate use of these drugs, then the evil, so far as we are concerned, will be as effectually scotched as it would be by the adoption of the most stringent legal enactments."

Drug Addicts.—Brown, Lucius P., is quoted as saying: "The anti-narcotic law going into effect recently is serving to uncover a terrible state of affairs. Already we have issued 1360 permits in the State, a large proportion of these to Nashville people, allowing druggists to sell them narcotics for habit use. While one-quarter of a grain twice a day is sufficient for the non-user of morphine, it requires eight grains daily for the person with the habit. Those who are on our books as having permits use an average of 251 grains a month."—*Pharm. Era,* 1914, vol. 47, p. 233. See also *J. Am. M. Assoc.,* 1914, vol. 62, p. 1427.

Price Maintenance. (Editorial.)—Considerable interest is being manifested at the present time in H. R. 13305, a bill introduced by Representative Stephens, of New Hampshire, which is entitled: "A Bill to Prevent Discrimination in Prices and to Provide for Publicity in Prices to Dealers and to the Public." This bill has been endorsed by the American Fair Trade League and a number of re-

tail organizations, and seeks to legalize contracts between manufacturers and dealers in articles of commerce produced under a trade mark or special brand. If enacted into law the bill would restore to manufacturers the rights supposedly existing under which the various contracts were developed in connection with the sale of so-called patent medicine.—*Pharm. Era,* 1914, vol. 47, pp. 145, 146.

Annual Meetings.—The annual meetings of State and National Pharmaceutical Associations and of other related organizations are attracting considerable attention. This year the order of holding the two National Drug Association meetings will be reversed: the 16th Annual Convention of Retail Druggists is to be held in Philadelphia, August 17–21, and the 62nd Annual Convention of the American Pharmaceutical Association is to follow, in Detroit, August 24–29, 1914.

American Chemical Society.—The meeting of the American Chemical Society was held in Cincinnati, April 7–10. Fully 1500 chemists attended and more than 150 papers were read before the various sections.

Meeting of the American Medical Association.—The meeting of the American Medical Association this year is to be held in Atlantic City, July 22–26. The preliminary program published in the *Journal,* May 16, 1914, contains an unusually interesting list of promised contributions. The Section on Pharmacology and Therapeutics will meet in the gymnasium of the Grammar School, on Ohio Avenue, and the program for this section, as usual, includes a number of papers of direct interest to pharmacists. The exhibition, both scientific as well as commercial, will be held in the Atlantic City Exhibition Building, corner of Kentucky Avenue and the Boardwalk. The scientific exhibition particularly promises to be unusually interesting, in that an effort will be made to present the material in a collective form so as to be more readily studied.—*J. Am. M. Assoc.,* 1914, vol. 62, pp. 1592–1609.

The Pharmacist and Pure Drugs.—A recent article in *Public Health Reports* (1914, vol. 29, pp. 1137–1144) calls attention to the reported results of analyses of a number of widely-used drugs and preparations, and points out that the proper enforcement of laws designed to regulate the practice of pharmacy, in conjunction with pure drugs laws, should relieve physicians and the public of any doubt as to the composition, purity, quality, and strength of all drugs and medicinal preparations used in the treatment of disease. Any-

thing short of this is a reflection on pharmacy as a calling and should not be tolerated or allowed to continue.

Laboratory Equipment of Pharmacists. (Floyd, Henry B.)—Some of the balances found in Washington drug stores were not sensitive to a grain, while others required a decided overweight before they would operate at all. Many of the weights used are inaccurate, having been allowed to corrode or to collect dirt. Pharmacists are known to use avoirdupois and apothecary's ounces interchangeably without regard to their difference. Glassware, especially that of less experienced manufacturers, is frequently inaccurate.—*J. Am. Pharm. Assoc.*, 1914, vol. 3, pp. 569–571.

Weights and Measures. (Editorial.)—In enforcing the weights and measures statutes in various States the officials report some peculiar conditions in connection with the metrological equipment of drug stores. Of particular interest is the fact that many instances are reported of over-size measuring glasses and heavy weights. These can be accounted for in only one way: the druggist has been imposed upon by the dealer from whom the inaccurate weights and measures were obtained. It behooves pharmacists to see that their weights and measures are accurate, and that none but accurate weights and measures are used. No legal requirement should be necessary to assure the proper weighing and measuring of the components of a prescription.—*J. N. A. R. D.*, 1914, vol. 18, pp. 262, 263.

Annual Reports of the Chemical Laboratory of the American Medical Association, Volume 6.—This little book of ninety-eight pages presents a report of the work done from January to December, 1913, and includes reprints of contributions, reports abstracted from the *Journal,* and reports not previously published. In addition to the work growing out of the investigations by the Council on Pharmacy and Chemistry, the laboratory's work includes the examination of "patent medicines," and the investigation of chemical questions connected with the Propaganda and the Queries and Minor Notes work of the *Journal.*

"*New and Nonofficial Remedies.*"—A book review of "New and Nonofficial Remedies" says that this book is a valuable work of reference which gives the gist of what is known about a great number of well-known remedies and medicinal agents.—*Pharm. J.*, 1914, vol. 92, p. 576.

Useful Drugs. (Editorial.)—"A Handbook of Useful Drugs," issued by the Council on Pharmacy and Chemistry of the American

Medical Association, is a selected list of important drugs suggested for the use of teachers of materia medica and therapeutics and to serve as a basis for the examination in therapeutics by State Medical Examining and Licensing Boards. The great aim of the compilation is to eliminate the mass of useless or superfluous drugs now in books on materia medica; it concerns products whose fixed value is generally recognized, and, therefore, it is particularly fitted to serve as a text on which teachers of materia medica and therapeutics may base their instruction. The properties, pharmacological action, therapeutic uses, and dosage of drugs are discussed concisely and in a practical manner. The methods of administration have received special attention, and there are occasional suggestions as to choice of a vehicle which will be of service to beginners in prescription writing. There is a table of solubilities of the medicaments in cold water and in cold alcohol, a pharmacological index, and a general index. The book may be studied profitably by the pharmacists and medical men of this country.—*Pharm. J.*, 1914, vol. 92, p. 278.

Digest of Comments.—A book review of Hygienic Laboratory Bulletin No. 87, including the Digest of Comments on the Pharmacopœia of the United States of America, and on the National Formulary, for the Calendar year 1911, says in part: "This volume is a rich source of references to articles in various journals and bulletins dealing in any way to the substances contained in the American Pharmacopœia, and places the user in position to readily find the original references in which he may be interested. The book is a model of compilation, such as one would expect from an international pharmacopœial secretariat."—*Pharm. Weekblad,* 1914, vol. 51, pp. 238, 239.

The Era Formulary.—Compilations of recipes for various objects and purposes have long been of interest to the retail druggist, and few stores in which the ordinary miscellaneous drug business is done can be profitably conducted without one or more books of this type. The new Era Formulary just published presents a collection of nearly 8000 formulas gathered from recognized authorities. The nine divisions of the volume include unofficial pharmaceutical preparations, toilet preparations, veterinary remedies, household remedies, paints, beverages, and miscellaneous preparations frequently called for by the customers of a live retail drug store. The material was compiled by William C. Alpers and Ezra J. Kennedy, and the book as published covers 521 large 8vo double-column pages, including an

index of 35 pages. As a compendium of suggestions for the up-to-date pharmacist this book should appeal to all pharmacists who are desirous of giving to their patrons the best possible service that they are capable of.

Pharmaceutisch Weekblad.—The number of this journal for April 3, 1914, concludes the fiftieth year of the publication and comprises 155 pages devoted to historical reviews of the progress of pharmacy during the past fifty years. As a supplement the publishers present a pamphlet of 98 pages, entitled "Monumenta Pharmaceutica," and containing a reprint of several historical papers of pharmaceutical interest. The first paper is a reprint of the communication by M. de la Condamine, "Sur l'Arbre du Quinquina," published in Paris in 1740. The pamphlet also contains a reprint of the paper by F. W. Sertürner (1817) in which he reports his discovery of morphine, a new base, and of meconic acid as being the principal constituents of opium. A paper by Smithson Tennant (1814) on the means of producing a double distillation by the same heat, a paper by John T. Barry (1819) on a new method of preparing pharmaceutical extracts, a paper by Thomas Thompson (1818) on Mr. Henry Tritton's patent for an improved apparatus for distillation, and a paper on the education of the apothecary, G. J. Mulder (1842), are also reprinted. This supplement is exceptionally interesting, in that it makes available for ready reference a number of the more important contributions to pharmaceutical literature.

Acetyline is a new name used in some portions of Europe for acetylsalicylic acid, and serves to further complicate the nomenclature of this now widely used substance.—*Pharm. Weekblad,* 1914, vol. 51, p. 578.

Afridol is described as sodium mercuri-o-toluylate, said to be an efficient substitute for corrosive mercuric chloride. Afridol is said to be active in dilutions up to 1 : 100,000, while corrosive sublimate is no longer active in solution of 1 : 50,000.—*Südd. Apoth.-Ztg.,* 1914, vol. 54, p. 62.

Alypin.—Lichtenstein, L., refers to the sudden fatal collapse after injection of alypin in a case reported by Proskauer and one by Ritter. Schröder and Garash have also reported cases of convulsions, stupor, and asphyxia after its use, and Lichtenstein adds another to this group.—*J. Am. M. Assoc.,* 1914, vol. 62, p. 975.

Amorphous Phosphorus. (*Anon.*)—A criticism on the introduction of amorphous phosphorus, a practically inert substance which is

being offered as a " valuable therapeutic agent."—*J. Am. M. Assoc.*, 1914, vol 62, pp. 793, 794. See also pp. 1033–1035.

Argyrism.—Crispin, Antonio M., reports a case of argyrism following the use of collargol. The administration of potassium iodide had not the slightest effect on the resulting color of the skin. The subsequent administration of hexamethylenamine caused the color to fade and become several shades lighter.—*J. Am. M. Assoc.*, 1914, vol. 62, p. 1394.

Aspidospermine. (Cow, Douglas.)—Experimental observations on the action of the alkaloids of quebracho. Quebrachine is by far the most toxic of the four alkaloids investigated. In small doses quebrachine exerts a stimulating action on the central nervous system, as also do the other alkaloids. The only obvious objective effect of this is seen in the respiration, which becomes both quicker and deeper.—*J. Pharmacol. and Exper. Therap.*, 1913–1914, vol. 5, pp. 341–356.

Aspirin. (Reed, Edward N.)—Report of a case of idiosyncrasy to aspirin (acetylsalicylic acid) in which vomiting, cyanosis, and œdema followed the ingestion of 5 grains of the drug. No treatment was instituted, and in about six hours the patient was comfortable.—*J. Am. M. Assoc.*, 1914, vol. 62, p. 773. See also p. 797.

Creolin consists of the glycerides of fatty acids along with cholesterins, lecithin, and ethereal oil, all of which are found in yeast. It is prepared by extracting fresh purified beer yeast with alcohol and separating the dissolved fat from the alcoholic extract by suitable means. Creolin is said to be useful in furunculosis, acne, sycosis, and similar affections of the skin. It is also said to be useful in habitual constipation, leucorrhœa, erosions of the vagina and cervix, and similar diseases.—*J. Am. M. Assoc.*, 1914, vol. 62, p. 931.

Cocaine. (Editorial.)—The demand for cocaine for legitimate medicinal uses appears to have diminished considerably in recent years. Some of the large firms, which formerly handled many thousands of ounces of cocaine in the course of the year, now do not sell so many hundreds, while other firms which also dealt in the article in not inconsiderable quantities now sell practically none.—*Pharm. J.*, 1914, vol. 92, p. 466.

Collargol. (Eisendrath, Daniel E.)—A preliminary note on the effect of injecting collargol into the renal pelvis. The report states that death resulted in animals from extensive and widely-distributed collargol embolism, and the author believes that these experiments

offer for the first time a logical explanation of deaths observed in the human being.—*J. Am. M. Assoc.*, 1914, vol. 62, pp. 1392, 1393.

Crotalin.—Anderson, John F., reports a fatal case of bacterial infection from the use of the venom of *Crotalus horridus* dissolved in water. He also reports the examination of 95 ampoules of crotalin solution prepared by four different firms, 35 of which (38.8 per cent.) were found not to be sterile.—*J. Am. M. Assoc.*, 1914, vol. 62, pp. 893–895.

Crotalin. (Yawger, N. S.)—Report on six cases of epilepsy treated with crotalin. Two patients were uninfluenced; two were worse during the treatment; one early in the course developed such intolerant toxic symptoms that further experimentation was unjustified, and the last patient died two and a half months after treatment. —*J. Am. M. Assoc.*, 1914, vol. 62, pp. 1533–1535.

Cymarin.—A glucoside obtained from Canadian hemp, said to have an action on the circulation somewhat similar to digitalis and to be an efficient diuretic.—*Südd. Apoth.-Ztg.*, 1914, vol. 54, p. 62.

Diachylon. (Editorial.)—Newcastle-on-Tyne pharmacists have done one of the best things that we have heard of recently, by resolving to stop the sale of diachylon plaster in the lump, or any other form which may be taken internally. They have come to this resolution after hearing from Mr. T. Maltby Clague particulars of the cases of lead poisoning among women due to diachylon. Mr. Clague has had excellent opportunities in his investigations with Sir Thomas Oliver, M.D., of seeing the damage that is done by diachylon, and he considers that all self-respecting registered chemists should refuse to sell the stuff to anyone. Its legitimiate use as a plaster is so trifling nowadays that the public would suffer little inconvenience if they could not buy it from pharmacies conducted under the act of 1908.—*Chem. and Drug.*, 1914, vol. 84, p. 458.

Erepton is a product prepared by the digestion of meat and consisting largely of amino-acids thus produced. It is prepared by the successive action of pepsin-hydrochloric acid, trypsin and erepsin on meat freed from fat and tendon; the end-product is then desiccated. Erepton is a brownish, hygroscopic powder, easily soluble in water and having an odor and taste suggestive of meat extract.—*J. Am. M. Assoc.*, 1914, vol. 62, p. 1559.

Eusitin.—Tablets containing the mucin substances obtained from *Althæa rosea syriens.* Intended for use in the treatment of obesity, the employment of those tablets being based upon their property of

abolishing the feeling of hunger from which patients suffer who are placed on a limited diet.—*Chem. and Drug.*, 1914, vol. 84, p. 443.

Friedmann Remedy. (Editorial.)—Several recent German articles on the Friedmann remedy appear to be uniformly unfavorable. They add to the testimony already given in this country that the Friedmann remedy is not inefficient alone, but also may be dangerous. All reliable reports regarding the treatment of patients by Friedmann's method seem to show either that it is actually injurious or else that it is less efficient than other well-known and less dangerous means of treatment.—*J. Am. M. Assoc.*, 1914, vol. 62, p. 1407. See also pp. 1206 and 1343.

Hydrogen Peroxide. (Stewart, R.)—There is really a very curious amount of ignorance prevalent as to hydrogen peroxide. The ordinary hydrogen peroxide of commerce is now an article sold by the ton, and even for many purposes of the drug trade this quality answers admirably. The ordinary commercial commodity, however, does not compare in stability with the higher-priced product used for medicinal purposes. The whole question is one of price. So long as drug stores, hospital authorities, and others expect a product at the very lowest possible price, it is hardly fair to expect manufacturers to deliver goods which it would cost two or three times the selling price to produce.—*Pharm. J.*, 1914, vol. 92, p. 353.

The Hypophosphite Fallacy. (*Anon.*)—A false therapeutic notion born of speculation soon dies a natural death if exposed unsupported to the cold world of facts, but when nursed by commercial interests it may be kept alive for generations. Interesting examples of this, to name but two or three, are the misconceptions perpetuated during the past half century concerning "lithia," the "natural" salicylates, and the hypophosphites. In spite of reliably reported observations, the hypophosphites continue to be employed by many practitioners, largely because the theory on which their use is based was thought to be plausible at the time when chemical theories were popular and gained a certain recognition and were adopted without scientific investigation. These theories were subsequently taken up by certain manufacturers and became a commercial asset, so that, as a result, a theory which uncommercialized would have died of inanition, was kept alive by continued advertisement.—*J. Am. M. Assoc.*, 1914, vol. 62, pp. 1346, 1347.

Ipecacuanha. (Van der Wielen and Reens.)—An assay of the same sample of ipecacuanha by the methods official in the Pharmaco-

pœias named gave the following wide variation in results: Japanese Pharmacopœia, 1.78 per cent.; Belgian, 1.71 per cent.; United States, 1.67 per cent.; Swiss, 1.735 per cent.; Swedish, 1.735 per cent.; Austrian, 2.15 per cent.; Hungarian, 2.13 per cent.; Dutch, 2.06 per cent.; German, 1.54 per cent.; Italian, 2.03 per cent. These results point to the desirability of an international process and standard.—*Pharm. J.*, 1914, vol. 92, p. 541.

Leukozon.—Calcium perborate mixed with talc and standardized to a content of 5 per cent. of available oxygen. Used as an antiseptic dusting powder.—*Chem. and Drug.*, 1914, vol. 84, p. 443.

Liquid Paraffin.—Peck, J. Wicliffe, in discussing the production and use of liquid paraffin, says: "It has been stated that liquid paraffin should not be given with meals or during the process of digestion, as it prevents the pancreatic emulsification of fats. The experiments *in vitro* I do not think would be repeated in the body. From practical experience, just after a meal is the time I should suggest. If taken on an empty stomach the oil passes through very often unmixed with the stools and taking the usual thirty hours. When given in excess to animals it passes through with apparently no colorable fats dissolved."—*Pharm. J.*, 1914, vol. 92, p. 509.

Novotryposafrol.—A derivative of tryposafrol, for use in trypanosome infections and also in veterinary medicine.—*Chem. and Drug.*, 1914, vol. 84, p. 443.

Perydal.—An antiseptic dusting powder, containing formaldehyde and Peruvian balsam. It is used as a general antiseptic for wounds, for dusting in the stockings, and for infants.—*Pharm. J.*, 1914, vol. 92, p. 286.

Phenolphthalein. (Editorial.)—A recent report of the laboratories of bacteriology and physiologic chemistry at the Jefferson Medical College in Philadelphia states that in twenty experiments, in each of which, before beginning the trials, the subject's urine showed no trace of albumin by delicate tests, 24-hour-specimen, collected after the administration of phenolphthalein in a from 1-grain to 2-grain dose, gave positive tests for protein in every case. The amount of albumin varied from a trace up to 0.25 per cent. by Esbach's quantitative method. The precipitate in many of the cases was tested and found to be insoluble in alcohol. Traces of phenolphthalein were demonstrated in the urine. The albuminuria lasted from one to three days.—*J. Am. M. Assoc.*, 1914, vol. 62, p. 1560.

Phenolphthalein-agar is agar-agar impregnated with phenolphthalein, 100 Gm. containing 3 Gm. of phenolphthalein. Phenolphtha-

lein-agar is prepared by impregnating 1000 Gm. of agar-agar with a solution obtained by dissolving 30 Gm. of phenolphthalein in a mixture of 2000 Cc. of water and 700 Cc. of alcohol and drying the impregnated agar-agar slowly.—*J. Am. M. Assoc.*, 1914, vol. 62, p. 1168.

Quinine Poisoning. (Underhill, Elizabeth C.)—Report of a case of quinine poisoning in a woman, age 20, who took at one dose 100 2-grain quinine pills. The toxic symptoms were accompanied by impairment of vision, which improved gradually.—*J. Am. M. Assoc.*, 1914, vol. 62, pp. 1396, 1397. See also p. 920.

Quinine-urea Hydrochloride. (Abstract.)—There is a certain element of danger attending the use of quinine-urea hydrochloride as a local anæsthetic. It has been pointed out that sloughing may follow its use when a solution stronger than 3 per cent. is used. An extensive abscess has followed the use of a 1 per cent. solution for the removal of internal hemorrhoids, and two cases of sloughing following the use of a 2 per cent. solution in similar operations are recorded. The general opinion is that solutions of this substance should not be stronger than 1 per cent.; some observers recommend even weaker solutions, and with proper attention to technic bad effects may be greatly reduced.—*Pharm. J.*, 1914, vol. 92, p. 368.

Riopan.—A concentrated preparation of ipecacuanha sent out as a brownish powder, soluble in water. It is standardized to contain 50 per cent. of ipecacuanha alkaloids in the form of their hydrochlorides; the other more or less inert substances are also present. One part of riopan is equivalent to 20 parts of ipecacuanha root.—*Chem. and Drug.*, 1914, vol. 84, p. 443.

Salvarsan.—No one can dispute the statement that many of the deaths from salvarsan have been caused by its ill-considered use, either in the face of contra-indications or in too large or too frequent dosage, but to argue from this that the fatalities are therefore not due to salvarsan and that salvarsan is not toxic is far from logical. The unwise use of salvarsan may be expected as a result of such arguments, and the stubborn denial of the toxicity of the drug has encouraged its careless administration.—*J. Am. M. Assoc.*, 1914, vol. 62, p. 1176.

Neosalvarsan. (*Anon.*)—Seven deaths have occurred in the Los Angeles Hospital within two days following intraspinal injections of a solution of neosalvarsan in autogenous serum, and another patient is reported as being likely to die.—*J. Am. M. Assoc.*, 1914, vol. 62, pp. 861, 862. See also pp. 957, 958.

Sarsaparilla. (Editorial.)—The proposition to include in the Pharmacopœia of the United States, Mexican, Honduras, Para, and Jamaica varieties of sarsaparilla is especially interesting in connection with the revision of the British Pharmocopœia, it being understood that this good old-fashioned drug does not commend itself to the Oxford Street savants, who desire to relegate it to the limbo of ex-official things.—*Chem. and Drug.,* 1914, vol. 84, p. 566.

Serum Treatment of Tetanus. (Editorial.)—The great value of antitetanus serum as a preventive is unquestioned. As a specific cure, however, this serum has fallen far short of the earliest expectations; it even has been asserted that so far the statistics and the evidence obtained from watching patients treated with serum do not indicate that it has any real curative value. It has been shown experimentally, however, that antitetanus serum may save animals already suffering from the symptoms of an otherwise fatal intoxication, but in order to accomplish this result the serum must be given in several hundred times the quantity required merely to protect, and it must be injected within a short time, from 24 to 36 hours, after the onset of the tetanus. Furthermore, it cannot be denied that the weight of statistics favors the serum.—*J. Am. M. Assoc.,* 1914, vol. 62, pp. 1174, 1175.

Silver Methylene Blue contains 24 per cent. of silver. Is being tried as an antiseptic, as it is assumed to possess a powerful bactericidal action in various infectious processes.—*Chem. and Drug.,* 1914, vol. 84, p. 443.

Tenosin.—The active constituents of ergot are now contracted to three substances, *p*-oxyphenolethylamine, beta-imidazolylethylamine, and ergotoxin. For therapeutic purposes only the first two substances come into consideration, as the ergotoxin is the gengren-producing substance of ergot. Tenosin is said to be a mixture of the two amines mentioned above, and is available either in the form of ampoules or as a liquid for internal administration.—*Südd. Apoth.-Ztg.,* 1914, vol. 54, p. 63.

Theobromine Sodium Salicylate. (Puckner and Leach.)—Report of an investigation of the available brands of theobromine sodium salicylate. The results of the investigation, which are in the form of a table, show some variation in the moisture content and also in the actual theobromine content of the dried specimens; the variation is unimportant. The products in their original state (undried), as compared in relation to the theobromine content (the highest per-

centage of theobromine being 48.61, the lowest 45.24), reveal a variation of only about 3 per cent., a variation which is negligible in the case of such drugs as theobromine.—*J. Am. M. Assoc.*, 1914, vol. 62, pp. 1108, 1109.

Tobacco Snuff. (*Anon.*)—The Supreme Court of North Dakota holds constitutional the antisnuff act of that State of 1913, which makes it unlawful to import, manufacture, distribute, or give away snuff, or substitute therefor, under whatever name called.—*J. Am. M. Assoc.*, 1914, vol. 62, p. 1424.

Tricarbin.—Under this name, or as glycarbin, glyceryl carbonate has been introduced as a chemical inert diluent and basis for medicinal substances and galenical preparations such as pills, powders, tablets, and cosmetic preparations. It occurs as a crystalline non-hygroscopic, permanent, insoluble powder; it melts with decomposition at about 149° C.—*Pharm. J.*, 1914, vol. 92, p. 286.

Vitamines. (*Anon.*)—Vitamine is the name given to a substance which is believed to be necessary to prevent the nervous lesions characteristic of beriberi. It is regarded as an antineuritic agent naturally present in rice, the removal of which by polishing causes the symptoms of the disease to appear. The name appears to be derived from *vita* (life and amine), indicating its chemical character. The substance was at first thought to be a pyrimidine base with the following formula: $C_{17}H_{20}O_7N_2$. It was at first believed to have the constitution of a ureide, but in his latest work Funk states that the nitrogen is not present in the amino form. Vitamine was first found in rice and was connected with beriberi. Other substances of similar character were subsequently discovered, and the name has become descriptive of a class. Vitamine was discovered in 1912 by Casimir Funk.—*J. Am. M. Assoc.*, 1914, vol. 62, p. 1349.

CORRESPONDENCE.

Amendment to Regulation 9, Relating to Guaranties by Wholesalers, Jobbers, Manufacturers, and Other Parties Residing in the United States to Protect Dealers from Prosecution.

Regulation 9 of the Rules and Regulations for the enforcement of the Food and Drugs Act, June 30, 1906 (34 Stat., 768), United States Department of Agriculture, is hereby amended, effective May 1, 1915, so as to read as follows:

REGULATION 9. GUARANTY.

(Section 9.)

(*a*) It having been determined that the legends "Guaranteed under the Food and Drugs Act, June 30, 1906," and "Guaranteed by (name of guarantor), under the Food and Drugs Act, June 30, 1906," borne on the labels or packages of food and drugs, accompanied by serial numbers given by the Secretary of Agriculture, are each misleading and deceptive, in that the public is induced by such legends and serial numbers to believe that the articles to which they relate have been examined and approved by the Government and that the Government guarantees that they comply with the law, the use of either legend, or any similar legend, on labels or packages should be discontinued. Inasmuch as the acceptance by the Secretary of Agriculture for filing of the guaranties of manufacturers and dealers and the giving by him of serial numbers thereto contribute to the deceptive character of legends on labels and packages, no guaranty in any form shall hereafter be filed with and no serial number shall hereafter be given to any guaranty by the Secretary of Agriculture. All guaranties now on file with the Secretary of Agriculture shall be stricken from the files, and the serial numbers assigned to such guaranties shall be canceled.

(*b*) The use on the label or package of any food or drug of any serial number required to be canceled by paragraph (*a*) of this regulation is prohibited.

(*c*) Any wholesaler, manufacturer, jobber, or other party residing in the United States may furnish to any dealer to whom he sells any article of food or drug a guaranty that such article is not adulterated or misbranded within the meaning of the Food and Drugs Act, June 30, 1906, as amended.

(*d*) Each guaranty to afford protection shall be signed by, and shall contain the name and address of, the wholesaler, manufacturer, jobber, dealer, or other party residing in the United States making the sale of the article or articles covered by it to the dealer, and shall be to the effect that such article or articles are not adulterated or misbranded within the meaning of the Federal Food and Drugs Act.

(*e*) Each guaranty in respect to any article or articles should be incorporated in or attached to the bill of sale, invoice, bill of lading, or other schedule, giving the names and quantities of the article or articles sold, and should not appear on the labels or packages.

(*f*) No dealer in food or drug products will be liable to prosecution if he can establish that the articles were sold under a guaranty given in compliance with this regulation.

W. G. McAdoo,
Secretary of the Treasury.
D. F. Houston,
Secretary of Agriculture.
William C. Redfield,
Secretary of Commerce.

Washington, D. C., May, 5, 1914.

ABOLITION OF GUARANTY LEGEND POSTPONED.

Revised Food Inspection Decision Allows Manufacturers' Additional Year in Which to Exhaust Stock of Labels.

Washington, D. C., May 29, 1914. It was announced to-day that it had been decided to postpone the effective date of Food Inspection Decision 153, which, in substance, abolishes, after May 1, 1915, the present guaranty legend on food and drugs.

This legend, now in general use by manufacturers, is "Guaranteed by (name of guarantor) under the Food and Drugs Act." The Secretaries of the Treasury, Agriculture, and Commerce have found it to be misleading and deceptive. Many people have been induced to believe that all articles labelled with the legend have been examined and approved by the Government. The facts are that putting the legend on labels by manufacturers is entirely voluntary, and that the Government never guarantees the wholesomeness or purity of food or drug products.

It appears that, acting in accordance with the regulation now in force, which permits the legend, many manufacturers have supplied themselves with large stocks of labels which cannot be used up by May 1, 1915. The result is that if the regulation, as amended by Food Inspection Decision 153, should go into effect May 1, 1915, large losses would accrue to citizens who have expended their money for labels in good faith and in an effort to comply with existing regulations.

To meet this situation the effective date of the amendment to the regulation will be postponed until May 1, 1916, and as to products packed and labelled prior to May 1, 1916, in compliance with law and with the present regulations, it will be postponed until November 1,

1916. Meanwhile, manufacturers may, and doubtless many will, label their good in compliance with the new regulations.

The decision is as follows:

FOOD INSPECTION DECISION NO. 155.

Changing Effective Date of Food Inspection Decision No. 153, which Amends Regulation 9, Relating to Guaranties by Wholesalers, Jobbers, Manufacturers, and other Parties Residing in the United States to Protect Dealers from Prosecution.

The effective date of Food Inspection Decision No. 153, issued May 5, 1914, is hereby postponed until May 1, 1916; *Provided,* That as to products packed and labelled prior to May 1, 1916, in accordance with law and with the regulations in force prior to May 5, 1914, it shall become effective November 1, 1916; *And Provided Further,* That compliance with the terms of Regulation 9 of the Rules and Regulations for the Enforcement of the Food and Drugs Act as amended by Food Inspection Decision No. 153 will be permitted at any time after the date of this decision.

C. S. HAMLIN,
Acting Secretary of the Treasury.
D. F. HOUSTON,
Secretary of Agriculture.
WM. C. REDFIELD,
Secretary of Commerce.

WASHINGTON, D. C., May 29, 1914.

CURRENT LITERATURE.

CONSTITUENTS OF SENNA.

An investigation of senna leaves to determine the exact constituents present revealed many interesting things about this well-known drug.

Tinnevelly senna leaves (*Cassia angustifolia,* Vahl); senna leaves from Lima, Peru, which were found to be botanically identical with the Tinnevelly leaves, and Alexandrian senna leaves were used.

An alcoholic extract of the Tinnevelly leaves, when distilled with steam, yielded a small amount of an essential oil. From the portion of the extract which was soluble in water the following substances were isolated: Salicylic acid, rhein, $C_{15}H_8O_6$; kaempferol, $C_{15}H_{10}O_6$; aloe-emodin, $C_{15}H_{10}O_5$; *kaempferin,* $C_{27}H_{30}O_{16}$, 6 H_2O (m. p. 185°–195°), a new glucoside of kaempferol; a mixture of the glucosides

of rhein and aloe-emodin; the magnesium salt of an unidentified organic acid. The aqueous liquid furthermore contained a quantity of a sugar which yielded *d*-phenylglucosazone (m. p. 216°), and some brown, amorphous products, which, on treatment with alkali, gave kaempferol, together with small amounts of rhein and aloe-emodin. Some amorphous, glucoside material was also present.

The portion of the alcoholic extract which was insoluble in water consisted of a soft, dark green resin, which amounted to 7.0 per cent. of the weight of the leaves employed. From this material, which contained considerable chlorophyll and amorphous products, there were isolated, in addition to some of the substances mentioned above, the following compounds: Myricyl alcohol; a phytosterol, $C_{27}H_{46}O$; a phytosterolin, $C_{33}H_{56}O_6$; palmitic and stearic acids.

The senna leaves from Lima, Peru, were found to contain all the above-mentioned compounds, with the exception of the magnesium salt, and, in addition, *iso*rhamnetin. A glucoside of *iso*rhamnetin was also present in association with glucosides of kaempferol, rhein, and aloe-emodin, but no pure compound could be isolated from the mixture.

Alexandrian senna leaves yielded, in addition to myricyl alcohol and a phytosterolin, rhein, aloe-emodin, kaempferol, and *iso*rhamnetin. These four substances were also present in the form of glucosides, and in much greater proportion as such than in the free state.

The statements of Tschirch and Hiepe (*Arch. Pharm.*, 1900, 238, 427) that senna leaves contain "sennaisoemodin," "sennachrysophanic acid" (chrysophanol), and a "substance, $C_{14}H_{10}O_5$," could not be confirmed, it having been ascertained that the anthraquinone derivatives present consist solely of rhein and aloe-emodin. In this connection it may be noted that a mixture of approximately equal quantities of the last-mentioned two compounds has the empirical composition and properties assigned by Tschirch and Hiepe to the "substance $C_{14}H_{10}O_5$." Furthermore, the "sennarhamnetin" of the last-mentioned authors has been found to be identical with the *iso*rhamnetin previously described by Perkin (T., 1896, 69, 1658).

Frank Tutin, from the Transactions of the Chemical Society, vol. 103, 1913. London. J. K. T.

THE SERUM TREATMENT OF HAY FEVER.—In a pamphlet, by Lewis M. Somers, M.D., published by Fritzsche Brothers, New York, a summary of ten years' experience in the use of pollen

antitoxines, Dr. Somers demonstrates that from the very nature of the disease no single therapeutic agent can act as a specific, nor even modify the symptoms in every case. The serum formerly used was prepared by the action of the pollen toxin of either spring or fall plants upon the horse, and the resulting serum bodies being the therapeutic agent employed. Many experiments with the pollen toxin upon individuals subject to hay fever have shown that in dilutions of one in ten thousand, when placed in the eyes or nose, typical attacks of hay fever have been produced, in which the symptoms are as irregular and peculiar as in a natural attack. The use of the antitoxin in these artificial cases promptly checks the symptoms and causes the attack to disappear. In the case of individuals not subject to hay fever the toxin had no effect whatever. An antitoxin has been prepared by Dunbar, combining pollen from spring plants and fall grasses, and has been experimented with with satisfactory results. Summarizing the experience of ten years' use of pollen antitoxin, the following conclusions were reached: "1. The serum produces prompt and positive amelioration of the symptoms of hay fever in the majority of cases. 2. In a smaller number this is accompanied with complete disappearance of the affection for that particular season. 3. When results are obtained, it favorably influences all the manifestations of hay fever in the larger number of cases, while in a smaller class one or more of the symptoms seem to be most markedly influenced. 4. When given during the attack of hay fever, irrespective of its severity, it produces palliation rather than absolute cure. 5. When successfully used during one season, it does not prevent the reappearance of the disease the following season, although there is reason to believe that a slight influence in modifying further attacks does exist."

PHILIP F. FACKENTHALL.

THE U S. PHARMACOPŒIA IX.

Prof. Joseph P. Remington, chairman of the Committee of Revision, in a recent address before the New York Branch of the A. Ph. A., stated that the work of revision was fast approaching completion and that the book would soon be printed. By international agreement it will contain the same strength and doses for all powerful preparations as do many of the leading pharmacopœias of the world. Tentatively, there will be 798 articles in the new U. S. P.